IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Remington	]	Art Unit: 1792
Serial No. 10/814,873	]	Examiner: R. Lafond
Filed: March 31, 2004	]	Confirmation no: 7863
For: ENHANCEMENT OF SiO2 DEPOSITION USING PHOSPHOROUS (V) COMPOUNDS	]	Attorney Docket: 1-16149

July 2, 2008

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Honorable Sir:

This brief is in furtherance of the Notice of Appeal, which was timely filed in connection with the above-captioned application on April 2, 2008. This Brief is being filed under the provisions of 37 CFR §41.37 and its related requirements. The fees required under 37 CFR 1.17(F) are submitted herewith. A fee for a one month extension of time for the filing of this brief is also submitted herewith.

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1. Real Party in Interest

The real party in interest is Pilkington, North America, which is a subsidiary of Pilkington Group Limited, which is a subsidiary of Nippon Sheet Glass Limited of Japan.

2. Related Appeals and Interferences

There is no known pending appeal or interference which will directly affect, or be directly affected by, or have a bearing on, the Board's decision in this Appeal.

3. Status of Claims

On April 2, 2008, applicant submitted a Notice of Appeal in connection with the subject application, appealing the rejection of claims 1-8 and 13.

The status of each of the claims is as follows:

1. Claims cancelled: 9-12;

2. Claims withdrawn from consideration but not cancelled: None;

3. Claims pending: 1-8 and 13;

4. Claims allowed: None;

5. Claims rejected: 1-8 and 13.

The claims on appeal are 1-8 and 13. A copy of the claims on file is submitted in the attached Claims Appendix.

4. Status of Amendments

No amendment was filed subsequent to the rejection of the application by the Office Action of November 2, 2007.

5. Summary of Claimed Subject Matter

The present invention, as defined by independent claim 1, defines a process for depositing a silica coating upon a heated glass substrate. The process comprises providing a heated glass substrate having a surface upon which the coating is to be deposited. A precursor mixture comprising a silane, an oxygen source, a radical scavenger, a phosphorous (V) compound and an inert carrier gas is directed toward and along the surface to be coated. The mixture is reacted at or near the surface to form a silica coating on the surface of the glass substrate.

Support for the heated glass substrate can be found, at least, on lines 15-16 of page 2.

Support for the surface to be coated can be found, at least, in lines 16-17 of page 2.

Support for a precursor mixture comprising a silane, an oxygen source, a radical scavenger, a phosphorous (V) compound and an inert carrier gas directed toward and along the surface to be coated can be found, at least, in lines 17-19 of page 2.

Support for reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate can be found, at least, in lines 19-20 of page 2

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Independent claim 13 defines a process for depositing a silica coating upon a heated glass substrate. The process comprises providing a heated glass substrate having a surface upon which the coating is to be deposited. Monosilane, oxygen, ethylene, triethylphosphate and an inert carrier gas are premixed to form a precursor

mixture which is directed mixture toward and along the surface to be coated. The mixture is reacted at or near the surface to form a silica coating on the surface of the glass substrate.

Support for the heated glass substrate can be found, at least, on lines 15-16 of page 2.

Support for a precursor mixture comprising a silane, an oxygen source, a radical scavenger, a phosphorous (V) compound and an inert carrier gas can be found, at least, in lines 17-19 of page 2.

Support for the silane being monosilane can be found, at least, in lines 13-14 of page 3.

Support for the radical scavenger being ethylene can be found, at least, in lines 16-17 of page 3.

Support for the phosphorous (V) compound being triethylphosphate can be found, at least, on page 4, lines 1-4.

Support for the gas mixture to be directed toward and along the surface to be coated can be found, at least, in lines 17-19 of page 2.

Support for reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate can be found, at least, in lines 19-20 of page 2.

6. Grounds for Rejection to be Reviewed on Appeal

On November 2, 2007, the Examiner issued an Office Action in connection with the present application. The Office Action was made final. The Examiner rejected the claims as follows:

A) Claims 1- 6 were rejected under 35 USC §103 as being unpatentable over Ye (US 6,106,892) in view of Neuman (US 5,599,387).

B) Claims 7-8 and 13 were rejected under 35 USC §103 as being unpatentable over Ye in view of Neuman, as above, and further in view of Soubeyrand (US 5,798,142).

7. Arguments

Claims 1-8 stand or fall together and will be argued collectively herein, in particular with regard to independent claim 1.

Claim 13 will be argued separately.

A) Rejection of Claims 1-6 under 35 USC §103 as being unpatentable over Ye in view of Neuman

In the Office Action, the Examiner rejects claims 1-6 under 35 USC §103, as being unpatentable over US 6106892 to Ye in view of US 5,599,387 to Neumann. Claims 7, 8 and 13 were rejected under Ye and Neumann, as above, and further in view of Soubeyrand (US 5,798,142).

Ye discloses a process for the production of silica coatings on a glass sheet, where in the process utilizes a phosphorous or a boron ester. The phosphorous compounds utilized therein are phosphorous (III) compounds, particularly triethyl phosphite and trimethyl phosphite.

Neuman discloses the production of layers which combine silicon and another metal on a glass sheet (column 3, lines 9-14). The Examiner cites Neuman as showing an accelerant for the production of silica layers, which accelerant may include phosphorous compounds.

Claim 1 discloses a process for depositing a silica coating upon a heated glass substrate. The process includes providing a heated glass substrate having a surface

upon which the coating is to be deposited. A precursor mixture comprising a silane, an oxygen source, a radical scavenger, a phosphorous (V) compound and an inert carrier gas are directed toward and along the surface to be coated, and the mixture is reacted at or near the surface to form a silica coating on the surface of the glass substrate.

The Examiner has previously acknowledged that the Ye reference utilizes only phosphorous III compounds. To overcome this deficiency of ye he has applied the Neuman reference. It is respectfully submitted, however, that this combination is improper.

First, the Neuman reference specifically addressed the deposition of a layer of silicon combined with another metal (as shown in the summary of the invention, as referenced above.) Tin is listed as a preferred metal, but the invention suggests other metals may be usable in combination to produce the silicon+metal layer. It is respectfully submitted that the use of a phosphorous compound, to the extent it is shown in the Neuman reference, is shown only in conjunction of the deposition of silicon + another metal, and not for the production of silica alone. Thus, it is respectfully submitted that the Neuman reference, in combination with Ye, would not show the use of a phosphorous V compound in the deposition of a silica layer.

The Examiner cites columns 13 and 14 of Neuman to show that the reference teaches the use of accelerants of silicon oxides alone or in conjunction with another metal. While this is acknowledged, it is submitted that Neuman does not actually teach the use of this accelerant with silicon oxide alone but is instead consistent in showing

layers of silicon oxide in conjunction with another metal. It is submitted that there is nothing in the reference to suggest its use in a process such as that of Ye.

In addition, it is respectfully submitted that the mention of Phosphorous V compounds in Neman is only one of a "laundry list" of potential accelerants, and there is no suggestion as to any particular utility in the selection of a phosphorous V compound. In the present invention for the deposition of a silica layer, it has been determined that the use of a phosphorous V compound has been found to have especially beneficial results. This can be seen, for example, in paragraph [0010] of the application as filed. This paragraph notes that the use of phosphorous V compounds resulted in an especially beneficial process for the production of silica on glass. This is further elucidated in paragraph [0011] of the application as filed, wherein further benefits for the use of phosphorous V compounds are noted. There is nothing in the Neuman reference to determine the benefits of the use of that particular compound out of the list of all of the compounds disclosed therein. Only in light of the present disclosure are such benefits apparent.

In view of the above, it is respectfully submitted that claim 1 distinguishes over the applied art of record. Reversal of this rejection is therefore respectfully requested. Claims 7 and 8 depend directly or indirectly from independent claim 1 and are therefore also believed to be allowable based upon this dependence.

B) Rejection of Claims 13 under 35 USC §103 as being unpatentable over Ye in view of Neuman and further in view of Soubeyrand

As noted above, Ye discloses a process for the production of silica coatings on a glass sheet, where in the process utilizes a phosphorous or a boron ester. The phosphorous compounds utilized therein are phosphorous (III) compounds, particularly triethyl phosphite and trimethyl phosphite.

Neuman discloses the production of layers which combine silicon and another metal on a glass sheet (column 3, lines 9-14). The Examiner cites Neuman as showing an accelerant for the production of silica layers, which accelerant may include phosphorous compounds.

Soubeyrand shows the deposition of a silica layer utilizing ethylene and an oxidant.

Claim 13 is similar to claim 1, but further defines the materials used in the process. Specifically, claim 13 requires the use of monosilane, triethylphosphate and ethylene.

Again, the Ye reference utilizes only phosphorous III compounds. To overcome this deficiency of ye he has applied the Neuman reference. The Soubeyrand reference is incorporated to show the use of ethylene. It is respectfully submitted, however, that this combination is also improper.

As with regard to claim 1, Neuman specifically addressed the deposition of a layer of silicon combined with another metal. Tin is listed as a preferred metal, but the invention suggests other metals may be usable in combination to produce the silicon+metal layer. It is respectfully submitted that the use of a phosphorous

compound, to the extent it is shown in the Neuman reference, is shown only in conjunction of the deposition of silicon + another metal, and not for the production of silica alone. Thus, it is respectfully submitted that the Neuman reference, in combination with Ye, would not show the use of a phosphorous V compound in the deposition of a silica layer.

The Examiner cites columns 13 and 14 of Neuman to show that the reference teaches the use of accelerants of silicon oxides alone or in conjunction with another metal. While this is acknowledged, it is submitted that Neuman does not actually teach the use of this accelerant with silicon oxide alone but is instead consistent in showing layers of silicon oxide in conjunction with another metal. It is submitted that there is nothing in the reference to suggest its use in a process such as that of Ye.

In addition, it is respectfully submitted that the mention of Phosphorous V compounds in Neman is only one of a "laundry list" of potential accelerants, and there is no suggestion as to any particular utility in the selection of a phosphorous V compound. In the present invention for the deposition of a silica layer, it has been determined that the use of a phosphorous V compound has been found to have especially beneficial results. This can be seen, for example, in paragraph [0010] of the application as filed. This paragraph notes that the use of phosphorous V compounds resulted in an especially beneficial process for the production of silica on glass. This is further elucidated in paragraph [0011] of the application as filed, wherein further benefits for the use of phosphorous V compounds are noted. There is nothing in the Neuman reference to determine the benefits of the use of that particular compound out of the list of all of

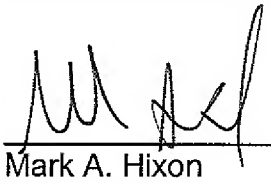
the compounds disclosed therein. Only in light of the present disclosure are such benefits apparent.

Thus, claim 13 is believed to be allowable over the applied references and reversal of the Examiner's rejection is requested.

CONCLUSION

In view of the above arguments, it is therefore respectfully submitted that each of the independent claims are allowable over the applied art of record. As claims 1 and 13 are patentable for the reasons discussed, and as claims 2-8 depend directly or indirectly from these independent claims, applicant submits claims 2-8 are likewise patentable. An expeditious determination by the Board to that effect is respectfully requested.

Respectfully submitted,



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CLAIMS APPENDIX

1. A process for depositing a silica coating upon a heated glass substrate comprising:

a) providing a heated glass substrate having a surface upon which the coating is to be deposited; and

b) directing a precursor mixture comprising a silane, an oxygen source, a radical scavenger, a phosphorous (V) compound and an inert carrier gas toward and along the surface to be coated, and reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate.

2. The process for depositing a silica coating upon a glass substrate as claimed in claim 1, wherein the phosphorous (V) compound comprises a phosphorous ester.

3. The process for depositing a silica coating upon a glass substrate as claimed in claim 1, wherein the phosphorous (V) compound comprises triethylphosphate.

4. The process for depositing a silica coating upon a glass substrate as claimed in claim 1, wherein the silane is monosilane.

5. The process for depositing a silica coating as claimed in claim 1, wherein the inert carrier gas comprises at least one of nitrogen and helium.

6. The process for depositing a silica coating as claimed in claim 1, wherein the radical scavenger is ethylene.

7. The process for depositing a silica coating as claimed in claim 1, wherein the oxygen containing material is oxygen gas.

8. The process for depositing a silica coating as claimed in claim 3, wherein the precursor mixture comprises about 0.1 to about 3.0 percent silane, about 0.4 to about 12.0 percent oxygen, about 0.6 to about 18.0 percent ethylene and about 0.1 to about 7.0 percent triethylphosphate, with the remainder comprising an inert carrier gas.

13. A process for depositing a silica coating upon a heated glass substrate comprising:

a) providing a heated glass substrate having a surface upon which the coating is to be deposited; and

b) premixing monosilane, oxygen, ethylene, triethylphosphate and an inert carrier gas to form a precursor mixture, directing the precursor mixture toward and along the surface to be coated, and reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate.

EVIDENCE APPENDIX

none

RELATED PROCEEDINGS APPENDIX

none